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Featured Article

Effect of Electronic Interactive Simulation on Senior Bachelor of Science in Nursing Students' Critical Thinking and Clinical Judgment Skills

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computer-based simulation;
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critical thinking disposition;
Kolb's experiential learning theory

Abstract

Background: Novice nurses' lack of clinical experience is a significant concern in today's complex health care environment.

Method: A randomized controlled trial compared the effects of an electronic interactive simulation (EIS) to traditional paper case study simulation on the critical thinking disposition and clinical judgment skills of senior baccalaureate nursing students.

Results: Participants who used EIS over a 2-week period increased their scores for critical thinking disposition overall and on three subscales.

Conclusions: This study's findings supported EIS as a viable option for experiential learning to enhance clinical judgment skills in bachelor of science in nursing students.

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It is well established in the nursing literature that clinical judgment, an outcome of critical thinking (Alfaro-LeFevre, 2008), varies based on a nurse's experience. Nurses with limited clinical experience make decisions based on theoretical learning and may not recognize deviations from unambiguous clinical presentations found in textbooks (Benner, 1984; Benner, Tanner, & Chesla, 2009). Research indicates that novice nurses tend to think in a linear manner that focuses on single tasks, psychomotor skills, or learned interventions (Gillespie & Paterson, 2009). In fact, many graduates enter the work force lacking the clinical judgment needed to provide safe quality care (Jeffries, 2005). One study showed that only 30% of new nursing graduates consistently demonstrated the ability to

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recognize and safely manage commonly occurring problems in their patients (Del Bueno, 2005). A larger study showed that 76% of novice nurses failed to meet clinical judgment expectations (Del Bueno, 2005). Novice nurses' lack of clinical experience is a significant concern, especially given the prevalence of high complexity care, shorter inpatient stays, and aging patients with chronic and acute illnesses.

Key Points

- A randomized controlled trial compared the effects of an electronic interactive simulation (EIS) to traditional paper case study simulation on the critical thinking disposition and clinical judgment skills of senior baccalaureate nursing students.
- Participants who used EIS over a 2-week period increased their scores for critical thinking disposition overall and on three subscales.
- This study's findings supported EIS as a viable option for experiential learning to enhance clinical judgment skills in bachelor of science in nursing students.

The deficit in students' ability to transition from nursing education to full-time practice highlights the need for alternative experiential learning opportunities to build decision-making skills and improve clinical judgment (Cronenwett et al., 2007; Gregory, Guse, Dick, & Russell, 2007). Although educators recognize that experience is necessary for developing these skills, providing clinical experience in patient care settings is hindered by a shortage of nurses, faculty, and clinical sites. In the absence of actual clinical experiences, simulation gives students a safe environment to practice and develop critical thinking and clinical judgment skills (Jeffries, 2007). Consequently, the use of simulation has increased dramatically in nursing education (Aebersold, Tschannen, & Bathish, 2012; Forsberg, Georg, Ziegert, & Fors, 2011; Guise, Chambers, & Välimäki, 2012).

Simulation includes a variety of methods, from high- to low-technology options. Although many methods have proved effective, each has advantages and disadvantages. Simulation that includes an interactive component—giving learners feedback on their clinical judgments—offers a constructivist, contextual, experiential learning environment that fosters critical thinking (Dreifuerst, 2009; Jeffries, 2006; Overstreet, 2009).

In recent years, there is much attention on high-fidelity manikins offering realistic patient care experiences and programmable signs and symptoms. In turn, faculty can manipulate the manikin responses giving students feedback about their clinical judgment during simulation and debriefing (Overstreet, 2009). Unfortunately, the cost of such simulation prevents many nursing programs from using it (Harlow & Sportsman, 2007; Tuoriniemi & Schott-Baer, 2008; Van Sell, Johnson-Russell, & Kindred, 2006).

Computer-based simulations accessed independently by a single user are interactive, challenging, and give feedback without requiring educators to create feedback (Dieterle & Clarke, 2007). Such programs, termed electronic interactive simulation (EIS), also are inexpensive and accessible: learners with a computer and internet connection can use them as often as desired.

A mainstay and one of the earliest teaching methods of experiential learning is the traditional paper case study simulation (TPCSS). Case studies may be in-depth descriptions of an entire scenario or more detailed vignettes that focus on a specific problem. Several scholars assert that TPCSS learning improves problem solving, decision making, critical thinking, and self-directed learning (Bentley, 2001; DeYoung; 2003; Toomy, 2003).

This article reports the findings of this study designed to examine the hypothesis that senior baccalaureate nursing students who participate in EIS of real-life clinical scenarios over a period of 2 weeks will experience significant increases in critical thinking disposition and clinical judgment skills compared with students who received TPCSS instruction. The purpose of this experimental study was to compare the effects of EIS and TPCSS on the clinical judgment skills of senior nursing students—enrolled in baccalaureate nursing programs in the United States—as measured by their critical thinking disposition and the accuracy and efficiency of their situational decision making.

Theoretical Framework

Experiential learning theory (ELT) by Kolb (1984), which explains the process learners use to move beyond data memorization, or cognitive gain, and into the critical thinking to support decision making guides this study. This active learning process takes place during real or simulated experiences in four stages: apprehending a concrete experience (Apprehension), reflectively observing previous explicit and tacit knowledge (Intention), forming abstract concepts of the problem to shape understanding (Comprehension), and testing the Comprehension in new situations (Extension).

The constructs examined in this study align with ELT's learning cycle. In nursing practice, assessing a clinical presentation (Apprehension) is followed by critical thinking or reflecting on knowledge and experience (Intention) leading to a clinical judgment and includes decision making (Comprehension). The nurse acts on the decision (Extension) and assesses the outcome as a new Apprehension, thereby influencing future clinical judgments.